

Byron Drury
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Summary

I am an experienced electronics, embedded firmware, and industrial product designer. I have had responsibility for a broad range of industrial and mil/aerospace products, scientific instruments, and R & D projects. Nearly all my experience has been in areas that require high reliability, extreme operating environments, and compliance to challenging test and regulatory limits. In addition to technical engineering skills, I value developing my communication and leadership skills – presentations, public speaking, technical and proposal writing, mentoring, and team coaching.

Professional Experience

Redgarden Engineering LLC, Boulder, Co Manufacturing Engineer

March 2018 – present

Provide PCB, cable, and electronics module manufacturing and quality support for customer programs.

- Checking schematics, layouts, BOMs, drawings, etc. for errors and DFM issues
- Serve as point of contact with distributors and manufacturing suppliers
- Find and evaluate new manufacturers and vendors
- Incoming inspection and troubleshooting of completed assemblies and components

Ophir Corporation, Littleton, Co Electronics Engineer

Sept 2016 – July 2017

Preliminary and detail design for airborne military electro-optical instrument/sensor. Product was an update and enhancement of a legacy design. This was a limited-term position, taking the product up to the Critical Design review. I had worked for Ophir corp. on the original generation of this product approx. 20 years before.

- Identify and solve EOL/DMS issues of components and COTS boards.
- Evaluate analog designs to identify opportunities for improving sensitivity, noise performance, EMI compliance, etc, using analysis, modeling/simulation, and prototyping.
- Design and layout of PCB updates using Mentor Graphics PADS tools and Vivado FPGA tools.
- Contribute to FMEA, WCA, MTBF, power and thermal calculations and reports.
- Create and present formal design reviews to customer

Earth Science Systems, LLC, Wheat Ridge, Colorado Electronics Engineer

May 2015 – August 2016

Instrumentation used for underground and drilling data acquisition and sensing. Responsible for designing, testing, and bringing to production of electronics, connectors, cables, housings to operate at -50C to 175C, up to 5000 psi. Design work included sensitive magnetometers, powerline communications, power supplies, sonic piezo transmitters and receivers, and microcontroller interfaces.

- Component evaluation and testing for very low noise, low power, and extreme temperature operation.
- PCB design and layout using Kicad tools.
- Selecting vendors for bare-die wire bonding, etching of flux concentrator materials, extreme temperature PCB materials.
- Write and use Python scripts for frequency-domain performance and noise analysis.

Evergreen Research, Inc., Golden, Colorado
Senior Electronics Engineer

Jan 2015 – March 2015

Design, PCB layout, documentation and component selection for medical device electronics. Bring-up and update a project - comprised of 10 analog and digital PCBs - that had been idled. Design included ultrasonics, precision motor controls, analog signal conditioning, power management.

- Update BOMs to find subs for obsolete and EOL components.
- Create and update schematics and PCB layouts using Altium Designer tool suite
- Write design documentation.
- Contribute to evaluating and documenting FMEA, safety, and hazard analyses, and conformance to IEC-60601-1 and IEC-62471 standards.

SEAKR Engineering Inc., Centennial, Colorado
Staff Hardware Engineer

June 2014 – Jan 2015

Formal Worst-Case Circuit Analysis process improvement and guidance.

Perform trade studies, modeling and simulations to create company-standard methods and documentation styles for worst-case analysis (WCA) of aerospace high-speed digital circuit designs.

- WCA includes timing, thermal stress, bus contention, propagation and transmission delays, skew analysis, signal integrity, operating environment and aging effects, correct de-rating factors.
- Software tools and data sources used: Mentor Graphics DX Designer, Mentor Graphics Hyperlynx SI, Synapticald WaveFormer Pro, PSPICE, IBIS models, manufacturer data

Ag Leader Technology, Ames, Iowa
Embedded Design Engineer

1996 – Nov 2013

Design and development of sensors, controls, and displays used in agricultural vehicles. Responsible for full life-cycle of approx. 20 products – definition, concepts, design, PCB layout, prototyping, requirements verification, procurement and BOM management, lab testing, field testing, production start-up, agency certification, cost reduction, ongoing support of older products.

- Product design experience included:
 - Microcontrollers – primarily Freescale (5121, 56XX, iMX, S08, S12). Also PIC12/16 family, Intel PXA255, ARM
 - Digital electronics – SDRAM, DDR2/3, Flash, EEPROM, CPLD/FPGAs, LCD and touchscreen interfaces, A/D and D/A circuits
 - Communications – CAN, Ethernet, USB, I2C, SPI, RS232/485
 - Analog electronics – switching and linear power; sensor inputs and signal conditioning; linear

op-amp and transistor control/feedback circuits; control of solenoids, hydraulic valves, stepper motors, servo motors, lighting, audio

- Protection and compliance – design for EMI emissions and susceptibility, automotive noise and current surges, ESD, temperature extremes
- Mechanical items – PCB and component vibration and stress analysis, encapsulation and coatings, connector/housing/cabling design. Component, board, and module thermal analysis.
- Mechanical testing – combined environment (shock, vib, impact, thermal, humidity, accelerated life) testing, test fixture fab, test chamber programming.
- Other functions:
 - Schematic drafting, PCB layout and routing (up to 10 layers) – using Mentor Graphics PADS Logic/Layout/Routing software
 - Assembly and C-language programming for system controls and board check-out.
 - Lab testing – Test design, LabView programming, data acquisition, data analysis
 - Management of BOMs, component sourcing, part and board suppliers, contract manufacturers, manufacturability and testability reviews
 - Creating FMEA and MTBF reports
 - Offsite certification at agency labs (Emissions, safety, OEM-required testing) – testing to CISPR25, ISO 14982, CEmark, CTick, IEC EN-61000
 - As the most experienced designer, I provided technical guidance, design checking, and coaching for other electronics engineers.

Ophir Corporation, Littleton Colorado
Software/Hardware Engineer

1993-1995

Circuit design and firmware development for atmospheric sensing instrumentation. Responsible for leading a firmware group. Key achievement was my work in competing for and winning a large Air Force contract, which included substantial time living and performing on-site test support and results evaluation at the flight test location, and leading the writing of formal software specifications.

- Programming – C, Assembly, and Matlab, targeting Intel X86 and TI DSP processors
 - Laser and optics tuning and control
 - High-speed data acquisition, processing, and logging
 - Created a large set of Matlab programs that allowed in-depth flight data post-processing and visualization, in order to study test results, and to explore algorithms to improve performance.
 - Management of a 5-person software engineering group
- Electronics design
 - Selection and integration of rack-mount systems, typically consisting of SBC, DSP card, high-speed data acquisition card(s), data storage, and interfaces to mechanical elements.
 - Design and select circuits, interfaces, cabling for mechanical, thermal, optical interfaces

Lockheed Martin Corporation, Denver Colorado
Electronics Engineer

1985-1992

- Developed hardware and software test rack systems. These were used for software development test-beds, simulators, ground support, etc for satellite and planetary science missions.

- Performed and wrote analog and digital WCA circuit analysis reports for NASA and Air Force products
- Developed complex Spice circuit analyses and models – for simulation and optimization of flight vehicle controls, sensors, cabling, radiation effects modeling, etc

Education and Training

- BS Electrical Engineering, John Brown University, 1985
- 12 hours of graduate degree courses in Software Project Management, University of Colorado, 1993-1994